



Flexware

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Rerate Case Study

Problem:

A customer in Zempoala, Mexico was having difficulty meeting the pressure and flow requirements to provide natural gas from the well head to the gas distribution header.



Rolls Royce – Cooper RF2BB-36 compressor

Discussion:

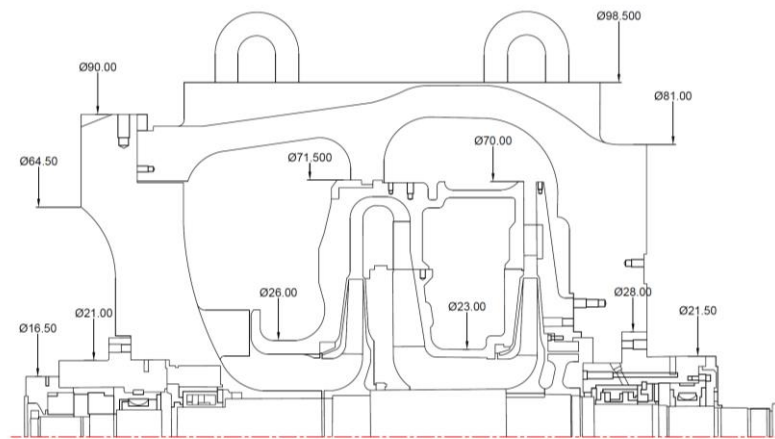
As the wells aged, and the gas was removed from the wells, the pressures and flow rates decreased. So, in order to continue to provide gas to the end user, the compressor was rerated to provide more head (pressure rise) and flow rate. This was accomplished by redesigning and manufacturing two new impellers for the Rolls Royce – Cooper RF2BB-36 compressor. As the compressor was driven by a gas turbine, the speed was restricted to a narrow band.

Resolution:

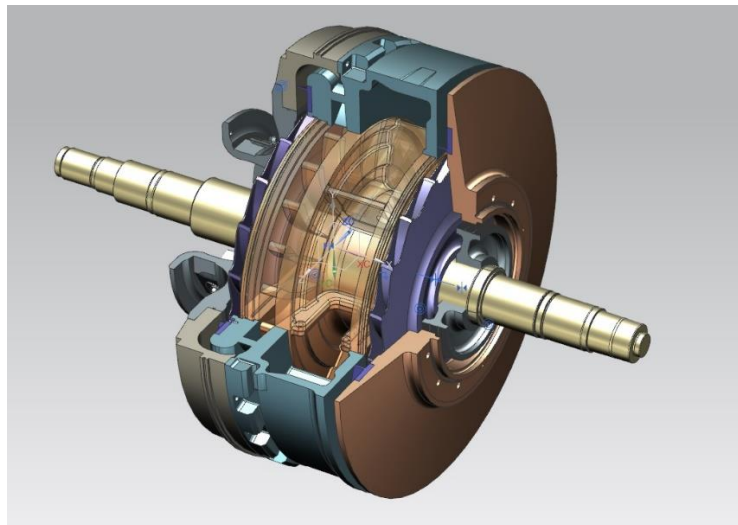
Accordingly, the impellers were designed with modified blading to improve head as well as increased diameter. While the diffuser section was reduced, the effect on efficiency was very small.

In addition to the aerodynamic design of the new impellers, the rotor dynamics for the new configuration was completed as well as stress and frequency analysis.

In order to obtain a broader operating range, the diffuser vanes were removed. While reducing the peak efficiency for the specific design point, the new vaneless design offered good efficiency over a broad range of operation.

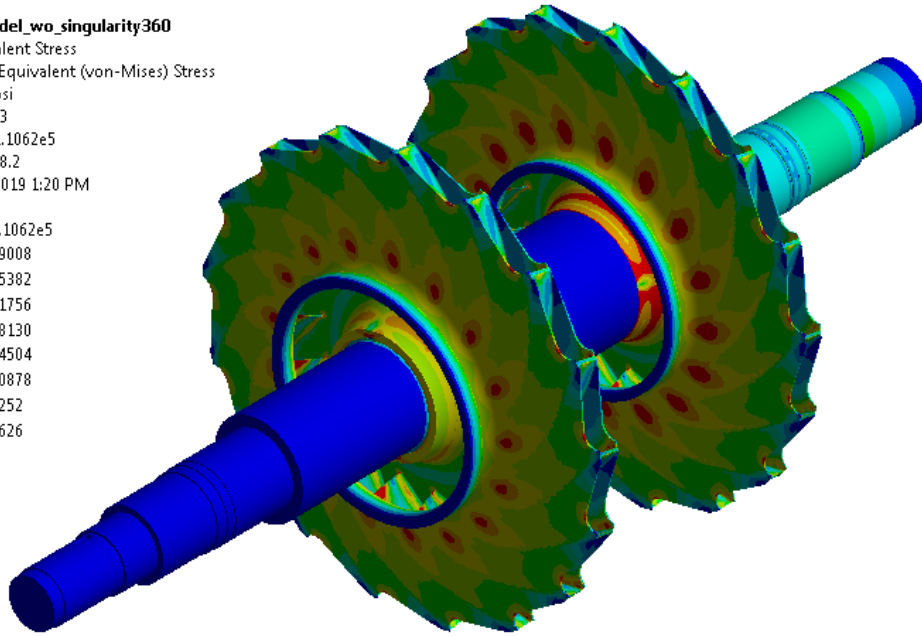
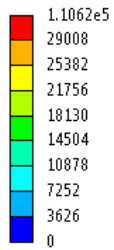


Rolls Royce RF2BB-36 Compressor

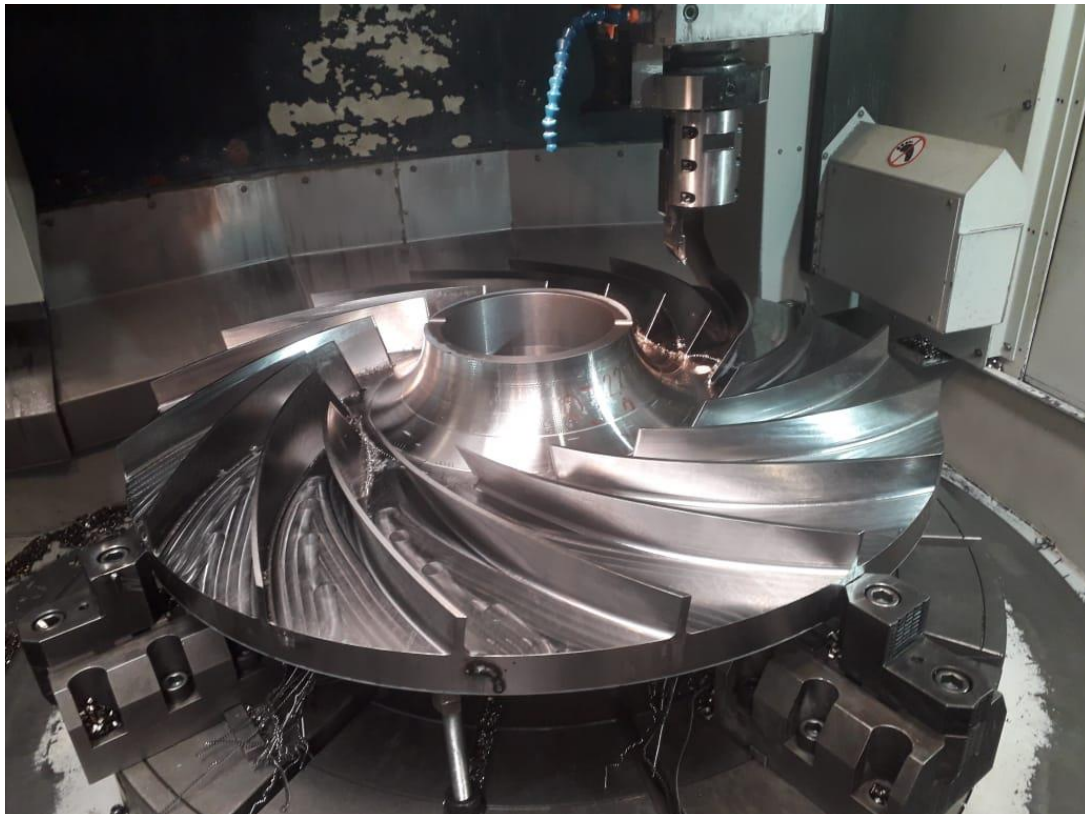


Related Rolls Royce RF2BB-36 Compressor Bundle

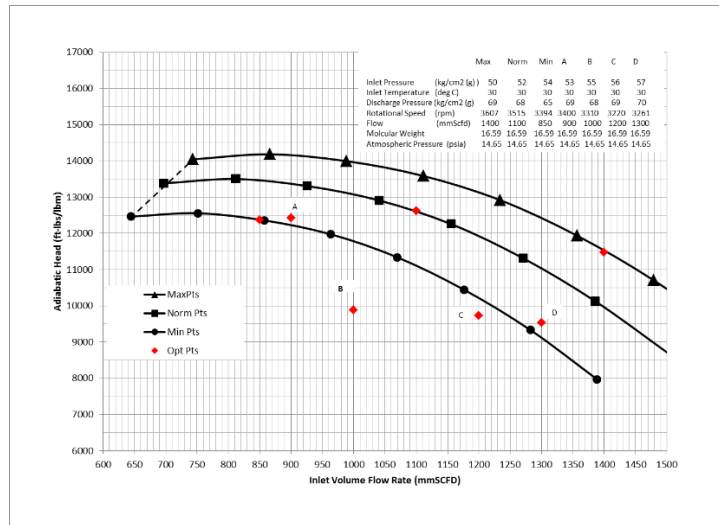
H: Model_wo_singularity360
Equivalent Stress
Type: Equivalent (von-Mises) Stress
Unit: psi
Time: 3
Max: 1.1062e5
Min: 28.2
18/2/2019 1:20 PM



FEA Stress & Frequency Analysis



Machining One of the New Impellers



The Rerated Compressor Offered a Broad Operating Range in Addition to the Higher Head.



Rolls Royce – Cooper RF2BB-36 Compressor Installation

**MT Gresh
President & CEO
Flexware, Inc.
24-Sep-26**